

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 1. **(Currently Amended)** A computer system having a multipath cross bar bus,
2 comprising:
3 one or more processors;
4 one or more resources capable of being shared by the one or more processors; and
5 a resource controller and bus that is connected to each resource and to each ~~processor~~
6 processor,
7 wherein the resource controller is capable of permitting each processor to simultaneously
8 access a different resource from the one or more ~~resources~~; resources, and
9 wherein the resource controller includes a hardware semaphore unit for controlling access
10 to the shared resources.

1 2. **(Currently Amended)** The system of Claim 1, wherein the one or more resources
2 further comprise one or more memory resources and wherein the resource controller further
3 comprises a memory controller that is capable of permitting a first processor to access a first
4 memory resource and a second processor to access a second memory resource at the same time.

1 3. (Original) The system of Claim 2, wherein the memory controller further comprises
2 one or more switches that are capable of selecting a particular memory resource to connect to a
3 particular processor and a resource arbitration controller that controls the one or more switches in
4 order to dynamically connect each processor independently to each memory resource.

1 4. (Original) The system of Claim 3, wherein the one or more switches comprise one or
2 more multiplexers.

1 5. (Original) The system of Claim 4, wherein the resources further comprise one or more
2 peripheral resources and wherein the resource controller further comprises a peripheral controller
3 that is capable of permitting a first processor to access a first peripheral resource and a second
4 processor to access a second peripheral resource at the same time.

1 6. (Original) The system of Claim 5, wherein the peripheral controller further comprises
2 one or more switches that are capable of selecting a particular peripheral resource to connect to a
3 particular processor and a resource arbitration controller that controls the one or more switches in
4 order to dynamically connect each processor independently to each peripheral resource.

1 7. (Original) The system of Claim 6, wherein the one or more switches comprise one or
2 more multiplexers.

1 8. (Original) The system of Claim 1, wherein the resources further comprise one or more
2 peripheral resources and wherein the resource controller further comprises a peripheral controller
3 that is capable of permitting a first processor to access a first peripheral resource and a second
4 processor to access a second peripheral resource at the same time.

1 9. (Original) The system of Claim 8, wherein the peripheral controller further comprises
2 one or more switches that are capable of selecting a particular peripheral resource to connect to a
3 particular processor and a resource arbitration controller that controls the one or more switches in
4 order to dynamically connect each processor independently to each peripheral resource.

1 10. (Original) The system of Claim 9, wherein the one or more switches comprise one or
2 more multiplexers.

1 11. **(Currently Amended)** An apparatus for controlling the access to one or more
2 computing resources by one or more ~~processor~~; processor, the apparatus comprising a resource
3 controller and bus that is connected to each resource and to each processor wherein the resource
4 controller is capable of permitting each processor to simultaneously access a different resource
5 from the one or more ~~resources~~; resources, and wherein the resource controller includes a
6 hardware semaphore unit for controlling access to the one or more resources.

1 12. (Original) The apparatus of Claim 11, wherein the resources further comprise one or
2 more memory resources and wherein the resource controller further comprises a memory

3 controller that is capable of permitting a first processor to access a first memory resource and a
4 second processor to access a second memory resource at the same time.

1 13. (Original) The apparatus of Claim 12, wherein the memory controller further
2 comprises one or more switches that are capable of selecting a particular memory resource to
3 connect to a particular processor and a resource arbitration controller that controls the one or
4 more switches in order to dynamically connect each processor independently to each memory
5 resource.

1 14. (Original) The apparatus of Claim 13, wherein the one or more switches comprise one
2 or more multiplexers.

1 15. (Original) The apparatus of Claim 14, wherein the resources further comprise one or
2 more peripheral resources and wherein the resource controller further comprises a peripheral
3 controller that is capable of permitting a first processor to access a first peripheral resource and a
4 second processor to access a second peripheral resource at the same time.

1 16. (Original) The apparatus of Claim 15, wherein the peripheral controller further
2 comprises one or more switches that are capable of selecting a particular peripheral resource to
3 connect to a particular processor and a resource arbitration controller that controls the one or
4 more switches in order to dynamically connect each processor independently to each peripheral
5 resource.

1 17. (Original) The apparatus of Claim 16, wherein the one or more switches comprise one
2 or more multiplexers.

1 18. (Original) The apparatus of Claim 11, wherein the resources further comprise one or
2 more peripheral resources and wherein the resource controller further comprises a peripheral
3 controller that is capable of permitting a first processor to access a first peripheral resource and a
4 second processor to access a second peripheral resource at the same time.

1 19. (Original) The apparatus of Claim 18, wherein the peripheral controller further
2 comprises one or more switches that are capable of selecting a particular peripheral resource to
3 connect to a particular processor and a resource arbitration controller that controls the one or
4 more switches in order to dynamically connect each processor independently to each peripheral
5 resource.

1 20. (Original) The apparatus of Claim 19, wherein the one or more switches comprise one
2 or more multiplexers.

1 21. (Original) An apparatus for controlling the access to one or more memory resources
2 by one or more processors, the controller comprising a memory resource controller and bus that
3 is connected to each memory resource and to each processor so wherein the memory resource
4 controller is capable of permitting each processor to simultaneously access a different resource
5 from the one or more memory resources.

1 22. **(Currently Amended)** The ~~controller~~ apparatus of Claim 21, wherein the memory
2 controller further comprises one or more switches that are capable of selecting a particular
3 memory resource to connect to a particular processor and a resource arbitration controller that
4 controls the one or more switches in order to dynamically connect each processor independently
5 to each memory resource.

1 23. **(Currently Amended)** The ~~controller~~ apparatus of Claim 22, wherein the one or
2 more switches comprise one or more multiplexers.

1 24. **(Currently Amended)** An apparatus for controlling access by one or more
2 processors to one or more peripheral resources, the apparatus comprising a peripheral resource
3 controller and bus that is connected to each peripheral resource and to each processor so wherein
4 the resource controller is capable of permitting each processor to simultaneously access a
5 different peripheral resource from the one or more peripheral ~~resources~~ resources, wherein the
6 peripheral resource controller includes a semaphore unit for controlling access to the one or more

7 peripheral resources, the semaphore unit being configured to receive requests from the one or
8 more processors and prioritize access based on the requests.

1 25. (Original) The controller of Claim 24, wherein the peripheral controller further
2 comprises one or more switches that are capable of selecting a particular peripheral resource to
3 connect to a particular processor and a resource arbitration controller that controls the one or
4 more switches in order to dynamically connect each processor independently to each peripheral
5 resource.

1 26. (Original) The controller of Claim 25, wherein the one or more switches comprise
2 one or more multiplexers.

1 27. **(Currently Amended)** A computer system, comprising:
2 a first processor capable of executing a set of instructions;
3 a second processor capable of executing a set of instructions;
4 a multipath memory controller having a first bus that is capable of connecting the first
5 processor to a set of memory resources and a second bus that is capable of connecting the second
6 processor to the same set of memory resources wherein the first and second processors are
7 capable of simultaneously accessing different memory ~~resources;~~ and resources, wherein the
8 multipath memory controller includes a first semaphore unit for prioritizing access to the set of
9 memory resources; and
10 a multipath peripheral controller having a first bus that is capable of connecting the first
11 processor to a set of peripheral resources and a second bus that is capable of connecting the
12 second processor to the same set of peripheral resources wherein the first and second processors
13 are capable of simultaneously accessing different peripheral ~~resources;~~ and resources, wherein
14 the multipath peripheral controller includes a second semaphore unit for prioritizing access to the
15 set of peripheral resources.